

1   **WHAT IS CLAIMED IS:**

1       1. A method of providing a modulated signal, the method comprising:  
2           providing a phase modulation signal; and  
3           providing amplitude modulation to the phase modulation signal to  
4       generate the modulated signal, wherein the phase modulation and amplitude  
5       modulation are synchronized.

1       2. The method of claim 1, wherein the phase modulation and amplitude  
2       modulation are synchronized in accordance with a calibration scheme.

1       3. The method of claim 2, wherein the calibration scheme includes  
2       providing the modulated signal having a desired characteristic wherein the phase  
3       modulation is reversed when the amplitude modulation is ~~zero~~ <sup>minimum</sup> *WJS 03/21/01*  
*KJS 3/21/01*

1       4. The method of claim 3, wherein the calibration scheme utilizes a  
2       phase jump detector, an envelope detector, and a minimum detector.

1       5. The method of claim 4, wherein the calibration scheme includes  
2       detecting a delay between the phase modulation being reversed and the amplitude  
3       modulation being ~~zero~~ <sup>minimum</sup> *WJS 03/21/01*  
*JWS 3/21/01*

1       6. The method of claim 5, wherein the providing amplitude modulation  
2       to the phase modulation signal to generate the modulated signal includes delaying  
3       the phase modulation in accordance with the delay.

1       7. The method of claim 1, wherein the providing amplitude modulation  
2       to the phase modulation signal to generate the modulated signal utilizes a gain  
3       controlled amplifier.

1       8. The method of claim 1, wherein the modulated signal is a radio  
2       frequency signal.

1           9.       The method of claim 2, wherein the providing a phase modulation  
2       signal utilizes a phase lock loop.

1           10.      The method of claim 9, wherein the providing a phase modulation  
2       signal utilizes a sigma-delta controlled phase lock loop.

1           11.      A method of modulating first data and second data on a signal, the  
2       method comprising steps of:

3                 phase or frequency modulating the signal in accordance with the first  
4       data; and

5                 amplitude modulating the signal in accordance with the second data,  
6       wherein the steps of phase or frequency modulating and amplitude modulating are  
7       coordinated in time with respect to each other to ensure integrity of the first data  
8       and the second data.

1           12.      The method of claim 11, wherein a delay circuit is utilized to  
2       coordinate in time the phase or frequency modulating step and the amplitude  
3       modulating step.

1           13.      The method of claim 12, wherein the delay circuit is calibrated by  
2       providing the modulated signal having a desired characteristic, the desired  
3       characteristic being when the phase modulation is reversed and the amplitude  
4       modulation being simultaneously ~~zero~~ minimum; and detecting a delay between the phase  
5       modulation being reversed and the amplitude modulation being ~~zero~~ minimum. *mjs 03/21/01*  
*KBS 3/21/01*

1           14.      A modulator, comprising:  
2                 a first data input;  
3                 a second data input;

4                   a frequency or phase modulator circuit coupled to the first data input,  
5       the frequency or phase modulator circuit providing modulation in response to first  
6       data at the first data input; and

7                   an amplitude modulator circuit coupled to the second data input, the  
8       amplitude modulator circuit providing modulation in response to second data at the  
9       second data input.

1       15.      The modulator of claim 14, further comprising a delay circuit, the  
2       delay circuit compensating for time delay for the frequency or phase modulator  
3       circuit and the amplitude modulator circuit.

1       16.      The modulator of claim 14, wherein the amplitude modulator is an  
2       amplifier.

1       17.      The modulator of claim 16, wherein the second data controls power  
2       provided to the amplifier.

1       18.      The modulator of claim 15, wherein the frequency or phase  
2       modulator circuit receives an incoming signal and provides a modulated signal to the  
3       amplitude modulator circuit.

1       19.      The modulator of claim 18, wherein the delay circuit is coupled  
2       between the second input and the amplitude modulator circuit.

1       20.     The modulator of claim 15, further comprising an envelope detector  
2       coupled to the amplitude modulator circuit, a minimum detector coupled to the  
3       envelope detector, a phase jump detector coupled to the amplitude modulator circuit,  
4       and a phase detector/charge pump circuit coupled to the phase jump detector and the  
5       minimum detector, the phase detector/charge pump circuit providing a delay signal  
6       during calibration of the modulator.